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*Indian Standard*  
DEVIATIONS FOR  
UNTOLERANCED DIMENSIONS OF  
MALLEABLE IRON CASTINGS

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**INDIAN STANDARDS INSTITUTION**  
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NEW DELHI 110002

# Indian Standard

## DEVIATIONS FOR UNTOLERANCED DIMENSIONS OF MALLEABLE IRON CASTINGS

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# *Indian Standard*

## DEVIATIONS FOR UNTOLERANCED DIMENSIONS OF MALLEABLE IRON CASTINGS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 31 January 1977, after the draft finalized by the Cast Iron and Malleable Cast Iron Sectional Committee had been approved by the Structural and Metals Division Council.

**0.2** The main object of this standard is to help the producers and the users of malleable iron castings to improve and simplify their production and distribution, eliminate waste of time and material involved in production and set up standards of quality and dimensions. It is hoped that this standard will satisfy a long-felt need by simplifying the application of agreed limits to drawings.

**0.3** Casting tolerances in malleable iron depend mainly on the manufacturing process, that is, hand-moulding, machine-moulding or any other improved process. In the case of malleable iron, the process of heat treatment also plays a very important role in guiding the tolerances.

**0.4** The deviations specified in the standard relate to unmachined castings. The machining allowances have not been taken into account in the deviations for untoleranced dimensions of castings. They are to be added for outside dimensions and subtracted for internal dimensions. The machining allowance should not be less than the minimum machining depth necessary plus the negative deviation in the case of outside dimension and the positive deviation in the case of internal dimension.

**0.5** This standard keeps in view the manufacturing and trade practices followed in the country in this field. While preparing this standard, assistance has been derived from DIN 1684 ( Blatt 1 ) 1962 Deviations for untoleranced dimensions of malleable iron castings, Tolerance Groups A, B and C, issued by Deutscher Normenausschuss.

**0.6** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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\*Rules for rounding off numerical values ( revised ).

## 1. SCOPE

**1.1** This standard covers the deviations for untoleranced dimensions of malleable iron castings. Three classes of deviations are dealt with as given below:

- Class 1 Deviations for malleable iron castings involving improved moulding processes for precision work.
- Class 2 Deviations for malleable iron castings involving machine moulding process.
- Class 3 Deviations for malleable iron castings involving hand moulding process.

## 2. DEVIATIONS

**2.1 Length, Width, Height and Centre-to-Centre Distance** — The deviations on untoleranced dimensions of malleable iron castings shall be as given in Tables 1 and 2.

**TABLE 1 DEVIATIONS ON UNTOLERANCED LENGTH, WIDTH, HEIGHT AND CENTRE-TO-CENTRE DISTANCE ON MALLEABLE IRON CASTINGS ( CLASS 1 )**

( *Clauses 2.1 and 2.3* )

All dimensions in millimetres.

	RANGE OF NOMINAL DIMENSIONS								
	Up to 18	Over 18 to 30	Over 30 to 50	Over 50 to 80	Over 80 to 120	Over 120 to 200	Over 200 to 315	Over 315 to 500	Over 500 to 800
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
O u t s i d e dimension	+0.9	+1.1	+1.3	+1.5	+1.8	+2.1	+2.6	+3.1	+3.8
	-0.7	-0.8	-1	-1.2	-1.4	-1.9	-2.1	-2.5	-3
Inside dimension and centre-to- centre distance	+0.7	+0.8	+1	+1.2	+1.4	+1.9	+2.1	+2.5	+3
	-0.9	-1.1	-1.3	-1.5	-1.8	-2.1	-2.6	-3.1	-3.8



**TABLE 2 DEVIATIONS ON UNTOLERANCED LENGTH, WIDTH, HEIGHT AND CENTRE-TO-CENTRE DISTANCE OF MALLEABLE IRON CASTINGS (CLASSES 2 AND 3)**

(Clauses 2.1 and 2.3)

All dimensions in millimetres.

TOLERANCE CLASS	RANGE OF NOMINAL DIMENSIONS					
		Up to 18	Over 18 to 50	Over 50 to 180	Over 180 to 500	Over 500 to 800*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2	Outside dimension	+1.2 -1	+2 -1.5	+4 -2.5	+6 -3.5	+8 -5
	Inside dimension and centre-to-centre distance	+1 -1.2	+1.5 -2	+2.5 -4	+3.5 -6	+5 -8
3	Outside dimension	+2 -1	+3 -2	+5 -3.5	+7 -5	+9 -7
	Inside dimension and centre-to-centre distance	+1 -2	+2 -3	+3.5 -5	+5 -7	+7 -9

\*Deviations for large range of nominal dimensions shall be agreed to between the purchaser and the manufacturer.

**2.2 Thickness** — The deviations on untoleranced wall thickness shall be as given in Tables 3 and 4.

**TABLE 3 DEVIATIONS ON UNTOLERANCED WALL THICKNESS OF MALLEABLE IRON CASTINGS (CLASS 1)**

(Clauses 2.2 and 2.2.1)

All dimensions in millimetres.

RANGE OF NOMINAL DIMENSIONS				
Up to 6	Over 6 to 10	Over 10 to 18	Over 18 to 30	Over 30 to 50
+0.9	+1.1	+1.4	+1.7	+2
-0.8	-0.9	-1.1	-1.3	-1.6

**TABLE 4 DEVIATIONS ON UNTOLERANGED WALL THICKNESS  
OF MALLEABLE IRON CASTINGS ( CLASSES 2 AND 3 )**

( *Clauses 2.2 and 2.2.1* )

All dimensions in millimetres.

TOLERANCE CLASS	RANGE OF NOMINAL DIMENSIONS			
	Up to 6	Over 6 to 18	Over 18 to 50	Over 50 to 120
(1)	(2)	(3)	(4)	(5)
2	$\pm 1$	$\pm 2$	$\pm 2.5$	$\pm 3.5$
3	$\pm 1.5$	$\pm 2.5$	$\pm 3.5$	$\pm 4.5$

**2.2.1** Deviations given in Tables 3 and 4 shall also be applicable to webs and ribs of castings.

**2.3 Diameter and Rounding** — For the outside and inside diameters as well as for roundings ( outside and inside radii ) the deviations given in Tables 1 and 2 shall apply.

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*Members*

SHRI P. R. JALAN  
SHRI RAVINDRA SALVI

SHRI J. B. SAXENA  
SHRI M. L. DHIR ( *Alternate* )

SHRI N. S. SWAMINATHAN

SHRI K. KUNCHITHAPATHAM ( *Alternate* )

SHRI D. G. DODHIA

*Representing*

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Pearlitic Iron Castings & Engineering Works,  
Bombay

Minstry of Defence ( DGOF ), Calcutta

Tractors & Farm Equipment Ltd, Madras

Shah Malleable Castings Ltd, Thane